

SPECIFICATION FOR APPROVAL

品名 (Description) : 开关电源

型号 (Model No.) : EAA200HS4.5

规格 (Specifications) : 4.5V/40A

版本 (REV) : V1.0

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版本修订

Revision History

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Foreword

Thank you to all customers for choosing our power supply. In order to further ensure the long-term reliability and stability of the customer's entire system, please read the following precautions carefully when using our power supply. If you have any questions, please contact our technical department in time. Personnel contact.

1.0 Reservation of power margin

1.1 Definition of power supply working environment temperature: All power supplies provided by our company to customers are of sufficient power. The working environment temperature refers to the external ambient temperature around our power supply (or the temperature inside the customer's box system), not the temperature inside the customer's box system. The maximum ambient temperature outside the customer's cabinet system.

When selecting and using the power supply, customer engineers must fully consider the ambient temperature outside the customer's box and the ambient temperature inside the box; to avoid over-temperature protection or service life of the power supply due to excessive internal ambient temperature. shorten.

1.2 The structure of the system box: Our company is concerned about whether the customer's box is sealed or unsealed, and whether the bottom shell of the power supply is close to the box or not when installed; rather than the specific appearance and internal structure.

Sealed boxes mainly rely on heat transfer and radiation for heat dissipation; unsealed boxes mainly rely on air convection for heat dissipation. Air convection heat dissipation is better than heat transfer and radiation heat dissipation.

Our company recommends that customers do not use power supplies with fans in sealed cabinets. Power supplies with fans mainly rely on forced air cooling for heat dissipation; and the air in the sealed cabinet cannot communicate with the outside, which will cause the ambient temperature inside the cabinet to rise greatly. , excessively high ambient temperature will further cause the efficiency of the power supply to decrease and the temperature to increase; it will affect the long-term reliable operation of the customer's cabinet.

If the customer must use the power supply with a fan in a sealed box, it must be derated. Our company recommends derating the peak current of the system to 80% for use; and the maximum peak current of the box (the maximum peak current of the box needs to be measured with an oscilloscope, and the effective current is generally measured with a current clamp meter) does not exceed the rated output current of the power supply. 80%.

When customers choose a power supply based on the box, they should base it on the maximum peak current of the customer's box, rather than the effective current of the box. The peak current of the system box is generally about 30% higher than the effective current. If the power supply is selected based on the limited current of the box, even if the effective current is lower than the rated output current of the power supply, the peak current of the box will be too high and exceed the limit of the power supply. current protection point, causing the

power supply overcurrent protection to malfunction. It is recommended that the maximum peak current of the customer's box should not exceed the rated output current of our power supply; the peak current needs to be tested with an oscilloscope. If the customer does not have such testing equipment, our company can provide related services.

2.0 Precautions for the use environment of the cabinet:

2.1 The system box is used in areas with high humidity, seaside, rainy and other humid areas, and the ambient temperature is lower than -30°C . When placing an order, please note that the power supply needs to be treated with three precautions; the box should be sealed as much as possible.

2.2 The system box is used in high-dust environments such as roadsides. It is recommended that the customer system adopt a sealed system, choose a power supply without a fan, and require the power supply to add three-proof treatment; if the system uses a non-sealed box, a dust cover must be added to avoid Excessive dust enters the customer's system and power supply, causing quality hazards.

2.3 The system cabinet is used in rental cabinets and suburban areas, which may involve low power input voltage, causing problems such as power under-voltage protection action or low power efficiency. It is recommended that customers use the system in areas where the input voltage may be relatively low. The power supply or system box wiring that uses full voltage input must be balanced. Increase the wire diameter of the system box input line and reduce the number of power supplies on one line to ensure that the power input voltage is higher than the rated input voltage.

 高压 high voltage	电源输入端口带有高压，不可以用手触摸 Power input port with high pressure, can not be touched by hand
 注意 pay attention to	电源是大漏电流的产品，通电前请可靠接地 The power supply is a product with a large leakage current. Please be reliably grounded before power is turned on
 高压 high voltage	严禁在雷雨天气下进行高压、交流电操作 High voltage and AC operation in thunderstorm weather is strictly prohibited

1、描述 Overview:

欢迎使用我公司研发生产的 LED 显示屏专用电源：该电源具有体积小、效率高、工作稳定、可靠性高、高效节能等特点。电源具有输入欠压，输出过流及输出短路保护；电源采用高效的同步整流电路极大地提高了电源的效率，效率高达 **87%**，极大地节约了能源；

Welcome to the special power supply for LED display developed and produced by our company: the power supply has the characteristics of small size, high efficiency, stable operation,

high reliability, high efficiency and energy saving. The power supply has input undervoltage, output overcurrent and output short-circuit protection; High efficiency synchronous rectification circuit is adopted in the power supply, which greatly improves the efficiency of the power supply, up to 87%, and greatly saves energy;

参考外观图片 Refer to appearance pictures:



2、环境条件 Environmental conditions:

参数 Parameter	最小 Min	典型 Typical	最大 Max	单位 Unit	注释 Remark
工作温度 Permanent operating temperature	-30		50	℃	其中 50℃~80℃需降额使用， 详见：12.2 工作温度降额曲线 Among them, 50℃~80℃ needs to be derated. See 12.2 Working temperature derating curve for details
储存温度 Storage temperature	-45		85	℃	
工作相对湿度 Work Relative Humidity	10		90	%	无冷凝 No condensation
存贮相对湿度 Storage Relative Humidity	10		90	%	
海拔高度 Altitude			3000	M	
散热方式 Cooling mode					自然风冷 Natural air cooling
大气压力 Atmospheric pressure	80		106	帕斯卡 Pascal	
振动耐受 Vibration	10-55Hz 19.6m/S ² (2G), 20 minutes each along X,Y and Z axis.				
冲击耐受 Shock	49m/S ² (5G), 20 once each X,Y and Z axis.				

3、输入特性 Input characteristic:

参数 Parameter	最小 Min	典型 Typical	最大 Max	单位 Unit	注释 Remark
输入电压范围 Input voltage range	190	220	264	Vac	详见：12.1 输入电压降额曲线 See: 12.1 derating curve of input voltage for details
额定输入电压 Rated input voltage	200	220	240	Vac	
交流输入电压频率 Input voltage frequency	47	50/60	63	Hz	
功率因数 PF	0.4			cos Φ	220Vac 满载 220Vac Full load
输入电流 Input current			4.0	A	220Vac 满载 220Vac Full load
输入冲击电流 Input shock current			120	A	220Vac 满载/冷态 220Vac Full load / cold state
待机功耗 Standby power			5	W	200-240Vac
交流输入制式 AC input system		单相输入 L、N			支持单相 Support for single phase

4、输出特性 Output characteristic:

4.1 基本输出特性 Basic output characteristics:

参数 Parameter	最小 Min	典型 Typical	最大 Max	单位 Unit	注释 Remark
输出电压范围 Output voltage	4.4	4.5	4.6	Vdc	
输出电流范围 Output current			40	A	详见：12.1 输入电压降额曲线 See: 12.1 derating curve of input voltage for details
负载调整率 Load regulation accuracy			±3%	%Vo	额定电压输入, 全负载变化 Rated voltage input, full load change
电压调整率 Voltage regulation accuracy			±1%	%Vo	额定电流输出, 全电压范围变化 Rated current output, change in full voltage range
稳压精度 Regulation accuracy			±3%	%Vo	额定电压输入/全负载输出 Rated voltage input/full load output
噪声+纹波(峰峰值)			≤200	mVp-p	在满负载时, 且测试时在输出端加并 0.1uF 瓷片电容或金膜电容和 10uF 电解

Ripple and noise					电容各一个,示波器带宽为 20MHz. When the oscilloscope is under full load, and one 0.1uF ceramic chip capacitor or gold film capacitor and one 10uF electrolytic capacitor are added to the output terminal during the test, the oscilloscope bandwidth is 20MHz
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4.2 其他输出特性 Other output characteristics:

参数 Parameter	最小 Min	典型 Typical	最大 Max	单位 Unit	注释 Remark
输出功率 Output Power (W)			200	W	
输出效率 Efficiency		87		%	220Vac 满载 220Vac Full load
输出动态响应 Output dynamic		$\pm 10\%V_o$ $\leq 150\mu s$			25%-50%或 50%-75%负载变化, 25%-50% or 50%-75% load change
输出过冲 Off overshoot			± 10	%VO	
温度系数 Temperature coefficient			0.1	%/°C	额定输出电压和输出电流, 全范围工作温度 Rated output voltage and current, full range operating temperature
开机输出延迟 Power output delay			3000	ms	220Vac 下满载, 常温测试 Full load test at 220Vac
开关机过冲 Off overshoot			± 10	%VO	全电压输入范围、全负载输出 Full voltage input range, full load output
输出电压上升时间 Output voltage rise time			100	ms	The rise time measured is when the output voltage rise from 10% to 90% of specified output V_{out} observed on the channel wave form. 从规定的输出电压 10%上升到 90%.
关机保持时间 Shutdown hold time	10			ms	220Vac 满载 220Vac Full load

5、保护特性 Protection Features:

保护 protection					
参数 Parameter	最小 Min	典型 Typical	最大 Max	单位 Unit	注释 Remark
输入欠压保护点 Input undervoltage protection	135		175	V~	FULL LOAD
输入欠压恢复点 Input voltage	140		180	V~	

recovery point					
输出过流保护点 Output current limit protection point	44		60	A	打嗝，自恢复 Hiccup Model, Auto-recovery
输出短路保护 Output short circuit protection	/	/	/	A	
过温度保护 Over temperature protection	/	/	/	℃	

6、其他特性 Other features:

参数 Parameter	标准要求 Standard/SPEC
输入泄漏电流 Leakage current	<1.0mA (Vin=220Vac) GB8898-2001 9.1.1
气味要求 Odour requirements	不会产生异味和有害健康的气味 Can not produce odors and unhealthy odors.

7、安全特性 Safety features:

安规及绝缘等级			
参数 Parameter		测试条件 Test conditions	标准、技术要求 Standard/SPEC
绝缘耐压 Isolation voltage	输入-输出 Input-Output	3000Vac/10mA/1min	No flashover, no breakdown
	输入-大地 Input-PE	1500Vac/10mA/1min	No flashover, no breakdown
	输出-大地 Output-PE	500Vdc/10mA/1min	No flashover, no breakdown
绝缘阻抗 Insulation Resistan	输入-输出 Input-Output	DC500V	≥10MΩ Min
	输入-大地 Input-PE	DC500V	≥10MΩ Min
	输出-大地 Output-PE	DC500V	≥10MΩ Min

8、机械特性 Mechanical characteristics :

机械特性 Mechanical characteristics	
长(L)*宽(W)*高(H)	190*82*30 (mm)
重量 (g)	385g ± 10%

9、输入连接器 Input connector:CON1, 9.5mm 间距 5PIN 端子, 300V/20A。

CON1, 9.5mm pitch 5PIN terminal, 300V/20A 。

NO. 序号	NO. 序号	Define. 定义
1	PIN1	NEUTRAL
2	PIN2	NEUTRAL
3	PIN3	LINE
4	PIN4	LINE
5	PIN5	EARTH

Note: Face the connection from left to right.

螺钉扭矩 (Screw Torque) : (1.0N.m)10.53Lb.in

10、输出连接器 Output connector:CON2, 9.5mm 间距 6PIN 端子, 300V/20A。

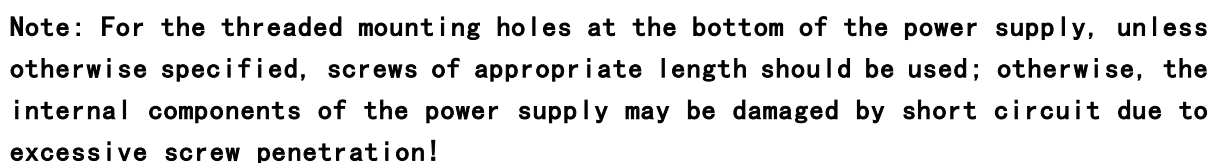
CON2, 9.5mm pitch 6PIN terminal, 300V/20A。

NO. 序号	NO. 序号	Define. 定义
1	PIN1	GND
2	PIN2	GND
3	PIN3	GND
4	PIN4	+5.0Vdc
5	PIN5	+5.0Vdc
6	PIN6	+5.0Vdc

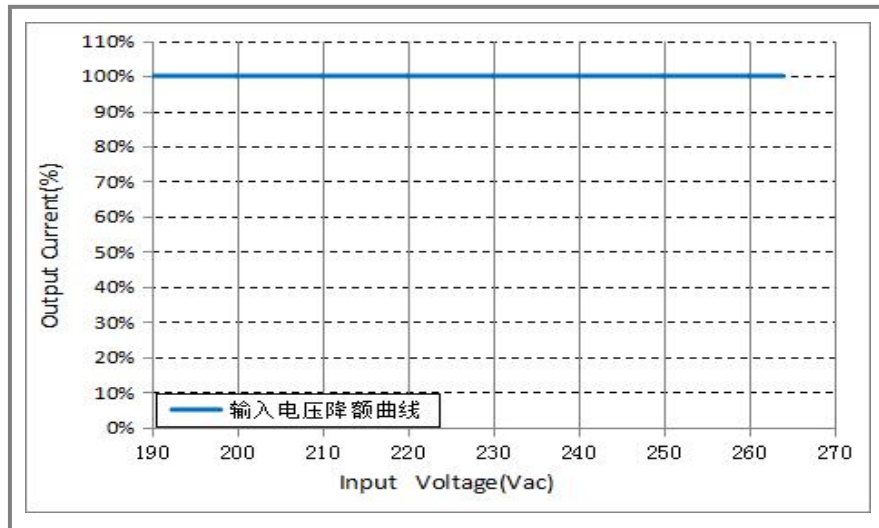
Note: Face the connection from left to right.

螺钉扭矩 (Screw Torque) : (1.0N.m)10.53Lb.in

11、安装孔位尺寸 Installation hole size:



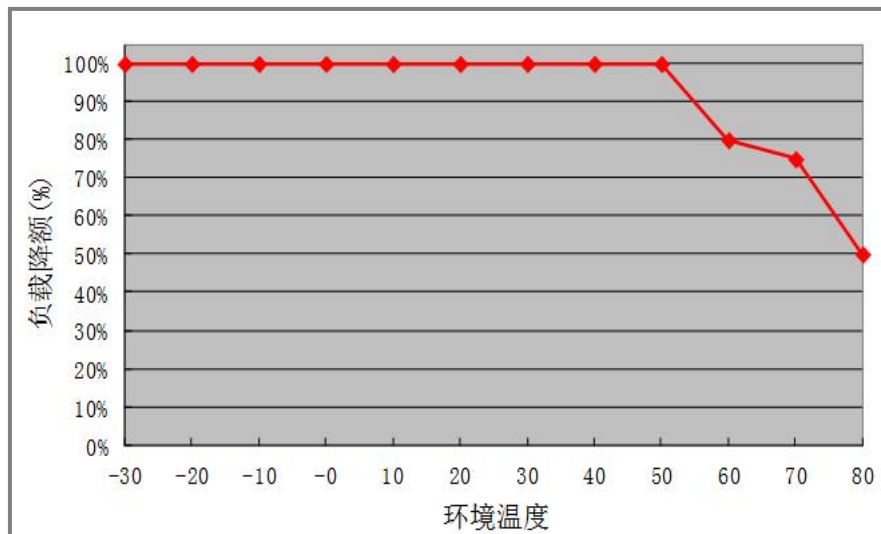
Address: Building 5&6, Xialang Industrial Zone, Heshuikou, Matian, Guangming, Shenzhen, China



注：此曲线图为测试时，电源模块机壳紧贴一块 320mm*320mm*22mm 散热板的带负载曲线；
（请根据实际应用选择合适的散热及导热方式）

Note: This curve is the load curve when the power module chassis is close to a 320mm*320mm*22mm heat sink during testing; (Please choose the appropriate heat dissipation and heat conduction method according to the actual application)

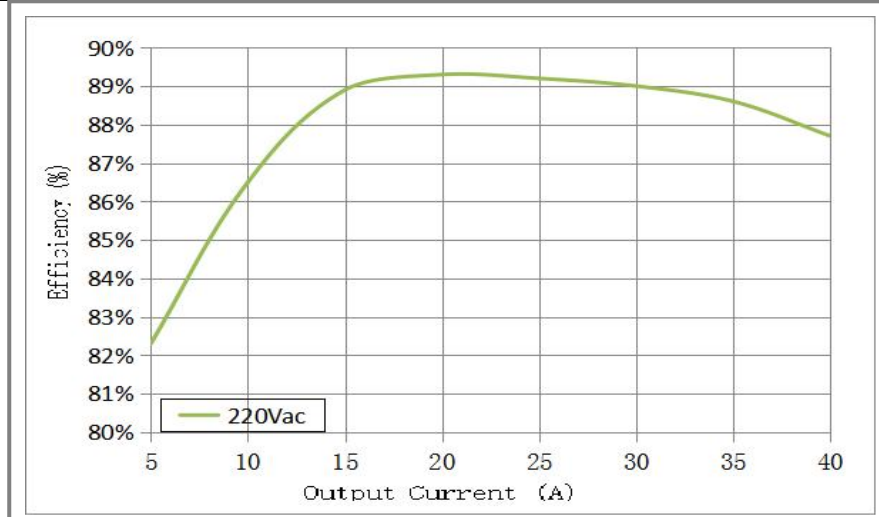
12.2 工作温度降额曲线 Operate temperature derating curve:



注：此曲线图为测试时，电源模块机壳紧贴一块 320mm*320mm*22mm 散热板的降额曲线；
（请根据实际应用选择合适的散热及导热方式。）

Note: This curve is the derating curve when the power module chassis is close to a 320mm*320mm*22mm heat sink during testing; (Please choose the appropriate heat dissipation and heat conduction method according to the actual application.)

12.3 负载与效率曲线 Effi & load curve: 220VAC



13、安全使用说明 Safe use instructions:

(1) Unpacking: Check whether the equipment is damaged during transportation. Retain packaging materials until all modular units of the power supply have been registered and inspected.

(2) General rules

- Air passages to modular units should not be blocked.
- The distance between any conductive part of the power supply equipment and metal parts must comply with relevant safety standards.

(3) Safety protection matters

- Once the safety protection of the equipment is damaged, the equipment must stop working and refer to the relevant maintenance regulations.
- When the power supply equipment is transferred from a cold environment to a warm environment, condensation may cause dangerous problems, so grounding requirements must be strictly implemented. Only qualified personnel may connect the equipment to the power supply.
- After cutting off the power supply, the machine must be stopped for four minutes to allow the capacitors to have sufficient discharge time before maintenance can be performed on the power supply equipment.

(4) Precautions

- The power supply should be used under the environmental conditions specified in the specifications.
- Do not adjust the potentiometer in the power supply at will.
- During use, the power supply should maintain good ventilation and heat dissipation; if you find smoke or an unpleasant smell during startup or use, you should turn off the power supply immediately.
- A fuse must be connected in series between the input power supply and the power supply equipment.

(5) Packaging: The packaging box contains the product name, model, manufacturer's logo, inspection certificate from the manufacturer's quality department, manufacturing date, etc.; the

packaging box contains product specifications and a list of accessories.

(6) Transportation: Suitable for transportation by vehicle, ship, and airplane. During transportation, it should be covered with shelter, protected from the sun, and handled in a civilized manner.

(7) Storage: The product should be placed in the packaging box when not in use. The warehouse ambient temperature is $-45\sim+85^{\circ}\text{C}$ and the relative humidity is $\leq 90\%$. Harmful gases, flammable, explosive products and corrosive products are not allowed in the warehouse. It is a non-toxic chemical product and is free from strong mechanical vibration, impact and strong magnetic field. The packaging box should be placed at least 20cm above the ground and at least 50cm away from walls, heat sources, and window air inlets. The storage period under these specified conditions is generally 2 years. After two years, it should be re-inspected.

(8) Warranty period: Within one year of the warranty period, our company will be responsible for repairing any natural damage caused by normal use of this product free of charge. However, if any of the following conditions occur, it will not be covered by the warranty:

- Damage caused by unauthorized repairs without the company's permission.
- Add or modify at will.
- Incorrect operation or use.
- The environmental conditions are abnormal and exceed the specifications, resulting in damage.
- Deliberate vandalism.
- Damage caused by irresistible natural disasters.

(9) Maintenance scope: If the power supply malfunctions due to errors in material and manufacturing technology during the warranty period, our company will repair or replace it free of charge. Repair services will include various labor services and any necessary adjustments or replacement parts, etc.

(10) Operation safety instructions: Under any circumstances, such as operation, cleaning or maintenance, please be sure to abide by the safety rules stipulated below. If any violation causes safety concerns beyond the original design and manufacturing, the company will not be responsible.

- Do not operate in volatile gas or flammable environment.
- Do not under any circumstances remove the cover or touch internal parts.
- For safety reasons, never perform internal maintenance and parts replacement alone.

14、引用标准及规范 Reference standards and norms:

- 14.1 GB / T 2423.1-2011 electric and electronic products, environmental testing, Part 2: Test methods / test A: low-temperature GB/T 2423.1-2011 电工电子产品环境试验, 第 2 部分: 试验方法/试验 A: 低温
- 14.2 GB / T 2423.2-2011 electric and electronic products, environmental testing, Part 2: Test Methods / Test B: high-temperature GB/T 2423.2-2011 电工电子产品环境试验, 第 2 部分: 试验方法/试验 B: 高温
- 14.3 GB / T 2423.3-1993 electric and electronic products environmental testing procedures - Test Ca: Damp heat test method; GB/T 2423.3-1993 电工电子产品基本环境试验规程—试验 Ca: 恒定湿热试验方法;
- 14.4 GB / T 2423.4.1993 electric and electronic products environmental testing procedures - Test Db: Damp heat test method; GB/T 2423.4.1993 电工电子产品基本环境试验规程—试验 Db: 交变湿热试验方法
- 14.5 GB / T 2423.5-1995 electric and electronic products, environmental testing, Part 2: Test Methods / Test Ea and guidance: Shock; GB/T 2423.5-1995 电工电子产品环境试验, 第 2 部分: 试验方法/试验 Ea 和导则: 冲击
- 14.6 GB / T 2423.6-1995 electric and electronic products, environmental testing, Part 2: Test Methods / Test Ea and guidance: Bump; GB/T 2423.6-1995 电工电子产品环境试验, 第 2 部分: 试验方法/试验 Ea 和导则: 碰撞
- 14.7 GB / T 2423.8-1995 electric and electronic products, environmental testing, Part 2: Test Methods / Test Ed: Free fall; GB/T 2423.8-1995 电工电子产品环境试验, 第 2 部分: 试验方法/试验 Ed: 自由跌落
- 14.8 GB / T 2423.10-1995 electric and electronic products, environmental testing, Part 2: Test Methods / Test Fc and guidance: Vibration (sinusoidal) ; GB/T 2423.10-1995 电工电子产品环境试验, 第 2 部分: 试验方法/试验 Fc 和导则: 振动 (正弦)
- 14.9 GB / T 2423.11-1997 electric and electronic products, environmental testing, Part 2: Test Methods / Test Fd: Random vibration wide band - General requirements; GB/T 2423.11-1997 电工电子产品环境试验, 第 2 部分: 试验方法/试验 Fd: 宽频带随机振动—一般要求
- 14.10 GB / T 2423.22-2002 electric and electronic products, environmental testing, Part 2: Test N: temperature change; GB/T 2423.22-2002 电工电子产品环境试验, 第 2 部分: 试验 N: 温度变化